Market Nursery Work Series

VOL. IV.

CARNATIONS AND PINKS

F. J. FLETCHER, F.R.H.S.

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BY

F. J. FLETCHER, F.R.H.S.

VOLUME IV

CARNATIONS AND PINKS

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CONTENTS

PAGE

CHAPTER I.—The Perpetual Flowering Carnation .. 1

CHAPTER II.—Propagation by Cuttings 4

CHAPTER III.—Potting and Growing On 9

CHAPTER IV.—Summer Treatment 16

CHAPTER V.—Enemies 20

CHAPTER VI.—Cutting and Packing the Flowers .. 23

CHAPTER VII.—Older Plants, and Indoor Planting .. 26

CHAPTER VIII.—Border Carnations 29

CHAPTER IX.—Raising Border Carnations from Seed 35

CHAPTER X.—Layering 41

CHAPTER XI.—Planting or Potting? 45

CHAPTER XII.—Perpetual and Other Border Carnations 49

CHAPTER XIII.—Dianthus Allwoodii 54

CHAPTER XIV.—Garden Pinks 60

Index 67

MARKET NURSERY WORK

VOL. IV

CARNATIONS AND PINKS

CHAPTER I

THE PERPETUAL FLOWERING CARNATION

We dealt very briefly with the earlier stages of the perpetual flowering carnation in Vol. I of this work, and now it will be necessary for us to make a closer study of it—its status, uses, and value. For many long years we grew the old " tree " carnations, but there is absolutely no comparison between those old stagers and the splendid perpetual flowering carnation of to-day.

Though not, strictly speaking, a twentieth century creation, the greatest strides have been made since the year 1900, and it certainly has become to all intents and purposes the flower of the century. It is, therefore, only as yet in its infancy, and we may be fully assured that the future will see further developments and great improvements, such as we are hardly aware of. It has behind it a small army of devoted enthusiasts experimenting, fostering, improving, and studying it, and as it owes much to them in the past, so it will be through their efforts that progress will be maintained.

But behind these enthusiasts lies another great forcing power, and this is the intrinsic merits of the flower *as* a flower, its great popularity, and its indispensability. " Carnations all the year round in great quality and abundance " is now quite commonplace ; is, indeed, expected, and the market grower who, having the facilities, takes it up in a fairly large way, has a satisfactory prospect before him and assured returns practically the whole year round.

This latter point may be questioned, but we have in mind the fact that the perpetual flowering carnation is indeed " perpetual," for it can be quite satisfactorily grown in beds in the open ground,

and so link up the spring and autumn crops of those grown under glass. We shall have occasion to refer to this later on.

If we were asked to offer an opinion as to the popularity of the carnation we should suggest, as one great factor, this quality of continuity, and as another its very gratifying length of stalk, which enables it so efficiently to set off its charms and graces. For, we think, that notwithstanding its many perfections in form, colour, and sweetness, these would be seriously handicapped if they were attached to a short, stiff stalk.

This is from the popular point of view. Growers, while endorsing both these reasons, would add to them others no less decisive. They find in the carnation an easily grown subject, one of which the stock can be quickly and readily increased ; one not too prone to virulent diseases which take so much time and trouble to combat. Another great merit is that it does not insist upon specially designed greenhouses in which it must be grown, and if the specialist has designed the most suitable kind of house in which to grow it in quantity, the reason is that because he specialises he naturally makes a special study of what his plants best appreciate. Add to this that the finished flower lends itself to packing with the greatest economy of space, that it is not ultra-fragile, and that considerable value may be easily accommodated in quite a light package, and the sum total of its merits mount up to a respectable whole.

The one demerit of the perpetual carnation, which though but one is rather formidable, is its deficiency in perfume. Most of our popular dianthus, the pinks and the clove carnation among them, are deliciously scented, and this was among their greatest merits. For centuries past the carnation has been so closely associated with perfume that it seems almost impossible to dissociate them—a scentless carnation being almost unimaginable—and it is this long tradition which makes us the more keenly alive to the lack of it in this modern creation. That this has proved so little derogatory to its advance in popularity is abounding testimony to its other high qualities, for though the fastidious may still advance it as an objection, there is no flower extant which has so quickly and completely established itself as indispensable. Any florist is more or less prepared to swear by it, and would emphatically declare

his inability to dispense with it if for any reason he was asked to. And he would be right, for he literally cannot do without it. Can we imagine his windows shorn of those elegant vases of scarlets and crimsons, pinks and whites, and bizarres? Can we suggest to him an efficient substitute which could make his mid-winter display as varied and as glorious as that of midsummer? So, while we can very heartily deplore this lack of perfume, we cannot see in it anything likely to interfere with the further development of the carnation as a great commercial flower. None the less, we trust that raisers and specialists will explore this matter, even if they have to take some retrograde steps to do so, and we entertain very lively and reasonable hopes that ere many years have passed they will be able to re-endow it with its most precious attribute, which somehow or other slipped from it in the course of its evolution.

Nor should we refrain from referring, in this connection, to its excellent keeping qualities. As florists ourselves, with all the florists' doleful experiences of consigning daily large quantities of flowers to the rubbish heap, all of which cost hard cash, we can testify to the fact that our losses in carnations from that cause have been practically nil, and that during the cooler months of the year we have frequently found blooms quite saleable after being cut from the plant nearly three weeks. Compare this with roses and many other popular flowers, and its economic value is apparent.

CHAPTER II

PROPAGATION BY CUTTINGS

In our brief reference to the propagation of carnations in Vol. I, we suggested that the growers of a limited number of plants might with advantage strike them singly in small pots, and that we had ourselves tried this method with considerable success. But we have now come to the point where we have to consider the subject on a much larger scale and introduce methods of "mass production." Compared with a brief ten years ago, we think we should be well within the mark if we expressed the opinion that 1000 plants are now wanted for every 100 in 1911, and that the demand is rapidly increasing. Nor do we think that the supply should be left entirely to specialists. There are many nurserymen who, having the facilities and the will to use them, can raise and find an outlet for a few hundreds of plants annually as a part of their regular routine, and the specialists would be the last men in the world to discourage them. It is for such we write.

In dealing with rose grafting we described the make-up of a propagating bed, such as is in general use, and a somewhat similar structure, with a moderated bottom heat, would do well for carnations, though instead of making the bed with fibre it should be made with sand 2 to 3 inches deep. When we have had our own propagating pit filled with other things we have improvised on the side benches for carnations, covering the stage with slates, laying the sand on them, and temporarily fixing covering lights. To conserve the bottom heat as well as we could we have nailed stout sacking along the front from the stage to the floor, and this has prevented its too rapid escape ; but though this proved a very useful makeshift we did not take the risk of entrusting our very earliest cuttings to it. We think the end of February is quite early enough in the season to trust to it. Incidentally, we might mention that the side benches come in very conveniently for chrysanthemum cuttings when they are no longer needed for carnations.

The sand used should be sharp and clean, and when it has been put on the beds it should be given a really good watering, and a whole

day if convenient in which to drain itself before the cuttings are put in. This settles it well down and solidifies it, so far as sand may be said to solidify, to make a congenial bed for the encouragement of roots. Loose, dry sand makes but a feeble anchorage for the cutting, and is no fit medium for growth of any kind.

Now as to the cuttings. Our illustrations are designed to make clear those points which we cannot lucidly convey in words, for in the latter we claim no great skill. A healthy, flowering shoot

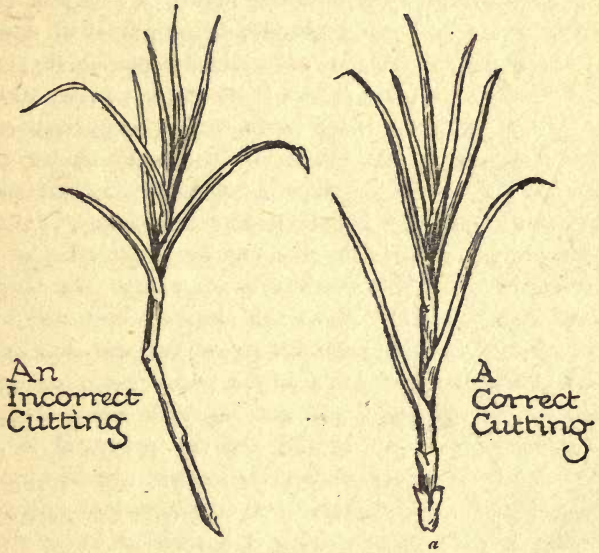

FIG. 1

throws out several side-growths, which is the characteristic of " tree " carnations, and it is these side-growths which furnish the cuttings. We show these in Fig. 2. In taking them, the growth nearest the flower is discarded, as also is the lowest, And why ? The top one looks good enough for anything, but because of its position it partakes too nearly of the character of the flower wood, and despite its present strength would eventually develop into a weakling. As to the lower growth, it shows nothing like the strength and vitality of those above it, and as it does not possess these now

so, experience shows, it never would, and for that reason is of little use to the propagator. No nurseryman, indeed no propagator, will seek to increase his stock by the inclusion of any plants which he has reason to think will not prove satisfactory either to himself or to any who may purchase them.

Before proceeding with the making of cuttings we must emphasise the fact that there are very special reasons why none but healthy stock should be propagated, and only really good cuttings put in. The principal reason is that this class of carnation, being perpetual flowering, is of necessity perpetual growing. There is no season of rest, no period for recuperation; it goes on and on till it has expended all its energy, when it begins to go "off colour" and quickly deteriorates. It is only by the regular propagation of really healthy cuttings that the vigour of the stock can be maintained by frequent renewal, and this is so essential that if for some reason or other it was not regularly followed up, we should see the perpetual flowering carnation become extinct almost as rapidly as it sprang into existence.

FIG. 2.—Growth of Wood for Cutting

This is not meant to be alarmist, for we are all too much alive to its interests to see it suffer neglect, yet it was well to refer to it and to urge that it should not be overlooked even by those whose knowledge of the plant may as yet be small. In this connection there are two other facts of some significance to note, and these are: (1) The perpetual flowering carnation quickly succumbs to disease, and (2) that once a plant becomes unhealthy it is almost impossible to win it back to health; and this emphasises the need for care.

We consider that the best time for taking cuttings is from the middle of January to the middle of March, though on an emergency there is scarcely a month of the year in which, given proper conditions, they will not strike. But for practical purposes and to fall in with the ordinary exigencies of the trade, those months are assuredly the most convenient and the best. A cutting should be about 4 inches in length, and should not be taken from the plant till it has attained that length. Instead of cutting it off, it should be detached from the plant by an upward pull, and this will bring it away intact, that is, with a bulge or small heel as shown in Fig. 1 *a*. That bulge is solidly built and is the natural spot for the emission of roots, being better equipped than the ordinary joint for the setting up of a separate existence.

The trimming of the cutting consists merely of the removal of the lower, undeveloped grass or foliage, and cutting the base quite smoothly with a sharp knife. There is no need for the shortening of the top grass, though this is often practised with the object of reducing the risk of "damping off," but we think that those who do so only substitute one risk for another, as the damaged foliage is naturally more susceptible to rot. The real remedy against "damping off" is not to crowd the cuttings. Having made them, do not expose to sun and air, or allow them to lie about for hours before they are put in, for that wastes vitality, every bit of which is needed and should be conserved. As soon as one variety is finished, every cutting should be immediately put in, and we much prefer to make it a two-man job—one making the cuttings, the other inserting them as fast as they are made. Insert at 1 inch apart in the row, with 3 inches from row to row, using a rather blunt dibble, not making the hole too deep, for the base of the cutting *must* rest on a firm bottom. The dibble, properly used, will also firm the sand about the cutting, but the operator should satisfy himself that each one is firm before passing on to the next.

Thoroughly water the cuttings in so that the sand may again settle round them, and it will be found that very little more will be required until rooting has actually commenced. Close down the lights, but give a little air each morning to carry off the condensation, and after the first week examine them every day to see if

there are any dry places, for though too much moisture is undoubtedly injurious, actual dryness is even more so.

Throughout this period the bottom heat should be maintained at about 60 degrees, but this must be considered as the maximum, for the carnation, being indeed a hardy plant, is not patient of heat, and even at this, the earliest, stage of its existence resents excessive warmth. In fact, as soon as rooting is known to have begun—which should be 18 to 20 days after insertion—the temperature must be modified by the freer admission of air and by the actual removal of the lights for one hour daily. It should never be thought of as a hot-house plant, for it most emphatically is not, and every succeeding stage of its growth should bring it a step nearer to those hardy conditions which are natural to it.

CHAPTER III

POTTING AND GROWING ON

THE last few days in the cutting bed should see the lights removed, for these cuttings must not be encouraged to make any growth save at the roots. By the time these are about ½-inch long they are ready for lifting and potting, and this might be done without any apparent check to the young plants. See Fig. 3. It involves the warming of the compost to the temperature of the house, not necessary equal to the bottom heat of the propagating bed. This compost should consist mainly of sandy loam chopped fine, with a slight addition of leaf soil, sand, and ashes from burnt refuse as correctives. This would be porous, friable, and not liable to run together and set firm. The pots, too, 3-inch by preference, should be cleaned, crocked, and warmed. Lift the cuttings carefully without breaking the roots, shaking off most of the sand which adheres to them, and pot them firmly, but not deeply, keeping them in the propagating house and shading until they are well rooted through, after which they should be removed to a house where the temperature ranges from 50 to 55 degrees. In this house they should go through a hardening regime, with the free admission of air at all favourable times. Coddling at this stage, or at any succeeding stage, would simply ruin their constitution, and bearing in mind what we had to say above on this point, no grower will be foolish enough to take risks. At this particular stage, even if at no other, the plants should not be too far removed from the glass.

We have now brought a batch of plants through their initial stages ; but there are other successive batches at short intervals, because the whole of the cuttings are not ready at the same time. With but slight modifications to meet the changing weather, the same regime may be followed, the principal modification being the more effective shading of the young stock as the sun increases in power. This applies not only to the cuttings while yet rooting, but more especially to the newly potted cuttings, and until such time as they have fairly established themselves in the 3-inch pots. See Fig. 4.

As the days lengthen and the warmth of the sun becomes something to reckon with, there is an almost sudden change in the young plants ; their grass is stronger and larger, their stems thicken, the colour deepens, and it seems as though they have just discovered their vocation in life and hasten to make good their start. It is just now that they are really ready for distribution, and the necessary

FIG. 3.—A Well-rooted Cutting

steps should at once be taken to dispose of all the surplus, retaining only such number as you may need for your own requirements, viz. for growing on and for the ultimate production of flowers. Every weak plant should be ruthlessly weeded out and consigned to the rubbish heap—the cheapest and best method of dealing with them. Great care should be exercised that not one single unsatisfactory plant gets packed in any of the orders, for otherwise your repute as a reliable " carnation man " is at stake.

With the approach of the warmer weather of April, the green aphis will inevitably swarm to attack the plants. It comes, apparently, from nowhere, and quickly crowds the top grass. If undisturbed, it can work great havoc in a very few days, havoc that may well be irremediable, but the prudent man has not awaited its attack—he has foreseen and forestalled it ; his remedies are already to his hand, either in the form of shreds, vaporiser, or cyanide. With either of these he makes an intensive onslaught, and after

FIG. 4.—A Cutting newly Potted

FIG. 5.—Stopped

destroying his existing enemies he prevents the approach of others by a periodic resort to fumigation at frequent intervals.

A very important operation must be put in hand upon those plants which are kept, and that is the " stopping," and though experience teaches us that better breaks may be obtained if the plants have already been potted on, it frequently happens that they are sufficiently advanced before this can be done, and it is essential that the stopping is done directly the plants are ready for it. See Fig. 5. On the whole, we think it advisable to select plants for growing on at quite an early date, and not to lose a chance by holding all the stock to await the exigencies of sale. To wait and pot up unsolds only must be the worst policy for anyone who is desirous of making

a special line, and who must have flowers later, but this is perhaps too often done. So, though we think it quite the thing to do to refer to "stopping" here, we wish it to be distinctly understood that, in practice, we make a point of potting the plants into 48-sized pots and "stopping" them immediately they are sufficiently established.

A young carnation is very brittle, especially at the axil of the foliage. Its natural growth is, at first, a single stem, which it will send up 12 or 15 inches and then produce a flower bud; but we do not want this, and before it has reached more than half that height it must be "stopped" if it is ever to become a good plant. About 7 or 8 inches of growth will be sufficient to develop the stem, and then its energies in the upward direction must be checked and diverted to the making of "breaks," which will go to the building of the future plant. For this, it is not sufficient to pinch out the leader, as we do with so many other plants, neither is it right to take away so much of the top so as to have nothing but the hard wood remaining; but the correct method is midway between the two, and this occurs, as a rule, 4 or 5 inches above the soil. And the way to make the separation is not by cutting, but by pulling, just as you would pull a pink piping. Take hold of the plant with the thumb and finger of the left hand just below where you wish the separation to be effected, and with the thumb and finger of the right hand just above, and give a sharp pull upward, and the top portion readily coming away makes the operation complete. This is more easily done early in the day, before the sun has affected the flow of sap in the plant and rendered it less brittle.

The next work of immediate importance is the potting on. Assuming that the plants are still in 60's. and that they have been duly "stopped," the time to pot them on is when the new breaks have started into active growth. Do not let them advance far, otherwise they may feel the check, and this is, at all times, bad for them. If, on the other hand, you are able to get on with the potting before it has become necessary to "stop" them, then the time may be selected when the establishment in the 60's. is complete and an abundance of roots are seen running round the side of the pot.

The vital question here is that of compost. May we, once again, emphasise the importance of a clean compost? Let the loam be pure loam; the manure free from foreign matter; the leaf soil

nothing but rotted leaves, and so on. *Clean* soil is not a new doctrine; greater men than us have always insisted upon it, and we only follow because we have proved its worth. Here is our formulæ for this second potting, which will be into 5-inch pots :—

1. Six barrowfuls fibrous loam well chopped up.
2. One barrowful old rotted farm manure, through ½-inch sieve.
3. Two pecks of sharp silver sand.
4. One peck ashes from burnt garden refuse, through ¼-inch sieve.
5. One barrowful sifted leaf soil if loam is too heavy, through ½-inch sieve.

No fertilisers and no lime are added at this stage, as the plants are mere sojourners in these pots for quite a brief period, which is not long enough to constitute any serious strain upon the compost. It may be seen, however, that it is a " good " compost and is calculated, as it is intended, to build up and foster a strong, firm growth. To make quite sure the various ingredients are thoroughly incorporated, we turn it over three times in the yard, and it gets a further mixing in its transit to the potting shed. We wash our pots always, for here again cleanliness pays; we even go so far as to rinse our crocks, and if there are those who think we are faddists and too particular we say, " not so," for if we use clean soil and clean pots we see no sense in upsetting such a sound rule by using dirty crocks to which the roots will probably adhere and eventually have to be broken away. In crocking we allow one larger crock, roughly 1½ inches in diameter, placed concave over the hole, and around and over this are about a dozen smaller ones, about the size of a small French bean seed.

In potting, which, with the batch of young plants we are following, is done about the middle of April, we disturb the young roots and the ball as little as we can, merely breaking the bottom where in a larger pot the crock would be found, and rounding off the sharp top rim. We are careful not to pot too deeply, for we have a wholesome dread of stem-rot, so we fill the pot about one-third full of the coarser portions of compost, and having pressed this well together we stand the ball with the young plant in the middle of the

pot, so that the top of the ball is within ¾ inch below the rim of the pot. We then, being satisfied as to position, fill in around with soil, and this we press home evenly and firmly, using a potting stick for the purpose, careful, however, not to make it hard, but moderately firm. Thus the 5-inch pot is filled to within ½ inch of the top of the pot, and we consider this is only just sufficient space to allow for water.

As the plants leave the potter's hands, an assistant, standing at the same bench, puts a bamboo tip to each and one tie, after which the carriers with the hand-barrow carry them away and stand them in the carnation house—at least it is for the present and up till June the carnation house—after which it will temporarily be a tomato house. We now no longer look upon them as infants, but as fairly started in life, expecting great things from them, realising, however, that they are as dependent upon our care and attention as ever they were. It is one of the fascinations of carnation culture that they so readily respond to treatment if it is kept on right lines, and they never leave us in any doubt as to their satisfactory development. We see them now occupying both sides of a large, light, and airy house, the centre bed of which is yet full of one-year plants carrying a full crop of bloom, and it is here they pass through their intermediate, preparatory stage. Incessant watchfulness and prompt measures keep them free from insect pests, and if any disease appears it is promptly dealt with. The watering and ventilation throughout the tricky month of May occupies the close attention of the grower, and when May, as it sometimes will, assumes the character of midsummer, then a slight coat of Elliott's shading over the glass tempers the effect of the sun, and renders it an easier matter to combat red spider and thrip—a pair of enemies which generally run in double harness.

While dealing with their cultivation, which, so far, has been under glass, we trust that the great fact of their hardiness has never been absent from our minds, because our general treatment of them at every stage must be influenced by it. To us it appears to be the fundamental fact, one we must always reckon with, and it applies more especially to questions of temperature and of ventilation. While they are in their earlier and infantile stages, they have practically but little individuality, and so do not appear to resent a temperature

which at a later period they most emphatically would, and it is only when they are sufficiently established and " on their own " that they become more and more insistent upon receiving more natural conditions. They show by their behaviour that they resent a high temperature and a close, oppressive atmosphere ; that, in short, they positively refuse to be coddled, no matter how good may be the intent. And that is *the* fact which carnations must never ignore.

CHAPTER IV

SUMMER TREATMENT

SOME weeks elapse, and then, in June, the time comes for the plants to receive their final potting. They have been carefully tended; had all the air they needed; have never been allowed to become dry; have been protected from the attacks of pests; have had additional ties, and now, in the full growth and vigour of their youth, they have to be transferred to their flowering pots and given several weeks' open-air treatment. The pots this time are 7 inch or 8 inch, and the same scrupulous cleanliness as advocated for the former potting must again be observed. The compost should be nearly, but not quite, the same, and it should not be so finely broken up. "The larger the pot, the coarser the soil," is an old maxim. In this compost we substitute thoroughly rotted cow manure for stable manure, unless the loam be very tenacious and heavy, and at the same time introduce two other ingredients, viz. mortar rubble and bones. Here, again, is the formulæ :—

1. Ten barrowfuls of turfy loam, chopped up.
2. Two barrowfuls of old cow manure, chopped up.
3. One bushel coarse silver sand.
4. Two pecks ashes from garden refuse.
5. One bushel mortar rubble, broken small.
6. Half bushel crushed bones, ¼ inch.

The process of potting is exactly the same as before, except that, this time, we press the compost more tightly into the pot. Without being as firm as we should make it for a chrysanthemum, it must, none the less, be tight, for it has to maintain the plant through its most strenuous and exacting phases. It has to carry a strong feeding plant throughout the summer, on through the autumn, and the first stages of flowering, then throughout the winter and spring, not only producing the flowers and carrying new growths, but imparting size, substance, and colour to the former (without which their value would be diminished), and to the latter, strength, vigour and

potential productiveness. Therefore the compost must not only be good, but it must be compressed so that its mechanical action may be perfect.

We are still writing of young, first-year plants, the cultivation of which differs somewhat from that we would suggest for the same plants when a year older, and this is the reason why we cannot yet talk of artificial manures or fertilisers. As will be noted, we have preferred a rich compost, such a compost as will satisfy every requirement of the growing plant until the season of flowering comes, when, having reached productivity, the demands upon the soil will so rapidly increase that additional food in the form of a fertiliser becomes essential. But as yet there is a great store of vigour, the natural vigour of youth, in each of these plants, and while we want to exploit this to the utmost we have to guard against undue coarseness which invites disease. So, having potted our plants, we stand them back on their bed of ashes in such manner as to leave every one "get-at-able," and for the remainder of the summer lay ourselves out to nurse and encourage them by strict attention to watering, tying, cleansing and cleaning. The watering is important, for no plant should ever be left to dry itself out. If but one plant in the whole batch needs water it should not be too much trouble to go out of the way to give it some. Whoever is in charge must carefully look them over every day and conscientiously supply their needs.

FIG. 6.—Plant in Pot in September

If the season happens to be dry and hot—which, after all, are but normal conditions—our persistent and ubiquitous foe, the red spider, will be on the war-path. We do not invite you to wait for his appearance and then fight him. What we do say is: keep him away by spraying once a week with slightly salted water, which we

have proved to be the simplest of all deterrents. Drive this well up on the under side of the foliage, if necessary laying the plants on their side to facilitate the operation. Should the red spider attack in the face of this, and obtain a foothold, fall back on that old and potent remedy—soft soap, paraffin, and water. This is a most useful, all-round insecticide, consisting of 1 oz. soft soap, 1 tablespoonful paraffin, and 1 gallon water, which must be kept vigorously stirred while being used, or the paraffin will not be sufficiently diffused.

At the end of August the plants should be immediately housed. It is no longer quite safe for them outside ; but they must not be rushed into a dirty house. Do not root up your tomatoes and fill up with carnations without due preparation, for if you do you will have ample opportunities for regret. The house must be clean, absolutely clean. Dig and heavily dress the borders with a soil insecticide, fumigate with sulphur or cyanide, wash the rafters and glass with soft soap, and so make everything sweet and fresh and clean for the valuable stock which has to take up an eight months' residence in that house. Filth and dirt and pests are almost bound to come some time, and it is something gained to give a clean start, for it is much easier to keep clean than to have to cleanse.

As the plants, showing well for bloom, are being carried in, the opportunity for feeding with a fertiliser is a convenient one—a spoonful of a recognised standard carnation manure being administered to each. Do not persuade yourself to use any but a well-balanced manure of repute, such perhaps as the great specialists use. A volatile manure, such, for example, as nitrate of soda, is far from being the best, for it is swift-acting and its effect is immediately apparent where you do not want it, viz. in the foliage. It must be a slower acting agent in which, with nitrogen, the phosphates and potash are duly proportioned.

When all are safely housed, we have to essay the winter's work, and this should be to a fixed, though not arbitrary, plan. Let us see what lies before us. First, there is the perfecting of that crop of bloom already well on the way ; second, the general good health and cleanliness of the plants have to be maintained ; third, the promotion of new growths to produce the succeeding crop ;

fourth, the production of cuttings. But though we keep distinct before us these four ends, they imply, collectively, no differentiation in the general treatment, except that the work of disbudding applies only to number one. They are all entirely bound up in the health and well-being of the stock, and it is this and this alone that must have our greatest consideration. What we have to do then is to give our charges the best possible conditions: plenty of light, a moderate warmth, fresh air, abundant nourishment without over-feeding; full attention to their detailed requirements. We have to sedulously guard them against disease and, later, against insect pests; to supply them with fertiliser as the strain upon them increases; to top-dress them with new compost in the later winter, and keep them up to concert pitch all the time they are in bearing. Between their crops of bloom (for their are slight intervals) they may be cleaned over and assisted, but never driven, for we must always remember that they are hardy plants, and impatient of exotic conditions. Remember, too, that this their first winter, is their best, is indeed the time of their lives, when they make the finest efforts of which they are capable, and produce larger, brighter, more substantial and more abundant blooms than ever they will again. From an economical point of view it matters but little if they go all out at the end, after having given a sufficiency of stout, healthy cuttings, for on the whole we incline to the opinion that it is more satisfactory to work on young stock every year and to depend less upon two-year-old plants which, while giving an abundance of highly coloured blooms are, on the whole, of second size and quality—valuable, doubtless, but still distinctly below the younger ones in value, especially in times of plenty.

FIG. 7.—Pot Plant in October

CHAPTER V

ENEMIES

We have several times referred to diseases, but so far have not attempted to deal particularly with them. The time has now come for us to do so, for though the actual diseases peculiar to the carnation are few in number, they can be exceedingly virulent. Before discussing them, we feel obliged once again to insist upon the fact that they are, one and all, preventable, and that when they attack plants it is almost always in response to conditions that invite them. Possibly there are times when those conditions are unavoidable, but, even so, there is almost sure to be an aftermath of evils. If we took as many pains to keep our carnations free from them as we do on behalf of our tomatoes, there would be little to fear. In the summer we should defeat them by spraying, as before stated, and in the winter we should call in the aid of sulphur and lime as our chief agents. Let us glance at them *seriatim.*

Stem Rot. This is one of the most common, as it is the most deadly, and it is caused in the majority of cases by deep potting. We have recently been told that it is also caused by the use of unsuitable sand for striking the cuttings, and though we do not challenge that assertion we had never held that theory and should neither endorse nor reject it until we have satisfied ourselves by experiments. But it has the impress of probability about it. But as to the danger of deep potting there can be no element of doubt. In potting, none of the joints of the plant should be buried except the basal ones, for it has been seen again and again that it is at the buried joints that the disease occurs. Deep potting is unnecessary in any case. Just as the carnation resents the wetting of its foliage in winter, so does it object to an accumulation of moisture around its stem at the collar. Yet this is almost bound to happen when a portion of that stem is below the surface of the soil, or when the atmospheric conditions of the house can only be described as humid. This is the case of *stem rot* so far as we have traced it, and the way to avoid it is by careful potting, watering, and ventilating. It is not hereditary, but some

varieties of more delicate membrane are susceptible to it, where those of a harder and more robust nature are not. There is no known cure.

Rust (*Uromyces caryophyllinus*). This is entirely due to adverse atmospheric conditions, and these are often aggravated by the plants themselves being too crowded, so that they are unable to benefit by the free circulation of air between and about them. An equable temperature is also essential, and this, combined with an ever-moving atmosphere, will prevent and sometimes cure it; but for this we commend our own practice of cutting off affected leaves and at once putting them on the fire. As a preventive in bad weather we blow a thin cloud of flowers of sulphur and slaked lime through the rows of plants at the pot level, and leave it to diffuse itself and finally settle wheresoe'er it will. By the aid of a glass we can detect it as a thin film covering all the foliage within an hour.

FIG. 8.—Carnation. Fairy-ring Leaf Spot

Spot (*Septoria dianthi*) *and Fairy-ring Spot* (*Heterosporum echinulatum*) are very similar diseases, both encouraged by warm, close conditions, and both capable of disseminating themselves rapidly by floating spores. Prevent their appearance if you possibly can by means of the sulphur and lime as recommended for the rust, and should it appear after this, then remove any affected leaf and burn it. Do not afford it an opportunity for spreading itself, and if it is attended to in good time it is easily stamped out. It is well for carnation growers that these diseases have been thoroughly investigated, are well understood, and, because of that, easily defeated. No man need look upon them now as in any way a bar to successful carnation growing, always supposing that the charge hands are fully alive to their duties.

We have recently been looking into the particulars of another disease (*Bacterium dianthi*), the presence of which is indicated by yellow spots on the foliage. These can be traced to the ravages

of sucking insects like the aphis or the thrip, which, penetrating the epidermis of the leaf with the proboscis, apparently leaves a poison behind, which in time creates a developed disease very much as poison would similarly do for us. Obviously, the thing is to fight and destroy these sucking insects, and if this is done thoroughly we cannot be troubled with *bacterium*. The disease is not fatal ; strong plants can throw it off, but it is, so far, not amenable to special treatment, and we are told that the only way to stamp it out is to propagate none but the healthiest cuttings and, presumably, to scrap affected plants at the end of the season.

Again and again we have had occasion to talk of insect pests, and no one can advance very far in carnation growing without coming up against them. They come in whole battalions in the most inexplicable way from nowhere, not many in variety, but in number uncountable. Practically they are but three : green aphis, red spider, and thrip. Either one of them, if left unchecked for quite a short time, would completely ruin the best stock of carnations in the country ; combined, they could bring disaster more complete and more swiftly upon these than upon any other plant in cultivation. At least, that is the conclusion forced upon us. Thus they constitute a very serious menace, and no grower must place himself in a position of disadvantage by being unprepared with remedial agents. They can all be fought and exterminated by the same methods. They begin their attacks in the summer weather outside, and there they must be fought as we earlier described ; but when winter comes and the plants are under glass the same methods do not apply. Soft soap and paraffin insecticides must be discarded, and reliance placed more on cyaniding or fumigating with nicotine preparations. Very occasionally, and choosing the weather, a slight spraying from beneath with nicotine extract is effective, and with these a well-ventilated house, and the fire heat under proper control, there should be little difficulty in keeping the plants free from their enemies.

CHAPTER VI

CUTTING AND PACKING THE FLOWERS

A NURSERYMAN who does not specialise in carnations and is content to grow anything up to a thousand or so, naturally does not go to any great expense in providing special and elaborate facilities for the packing of his blooms, being quite content to make the best use of those he has at hand. But the specialist, the grower of thousands, with whom the packing and marketing of cut bloom is a very large and important part of the routine, does go out of his way to provide facilities that are both labour-saving and efficient. He provides for himself a proper packing shed, the roof of which is thickly thatched. The building need not be lofty (unless it has also to be used for packing general nursery stock, which we think unlikely), but it must be high enough to be airy and roomy. Packing benches run around the sides, while the centre is fitted with receptacles to hold water, say, either galvanised or cement shallow tanks, with numerous movable divisions, from either side of which the packers can take the blooms without getting in one another's way. Still, whether it be the small grower with his plugged flower pots, his pails and his jars, or the large grower with his permanent tanks, the essentials remain the same—the ventilation of the shed must be good, the air cool, the water fresh for the flowers which have to stand a whole day or a night in it before being packed.

Take those as the essential points. There is a correct time for cutting the blooms, and this is either in the early morning or at the fall of evening. To cut them in the day-time, when the sun is or has been shining, or when the ordinary day-time evaporation has reduced the moisture within them, is unreasonable and faulty, for blooms cut under those conditions are not likely to last out their full term, and this is unfair to the purchaser. Practically the same non-keeping qualities attach to blooms cut from a plant that is dry, but this is so obvious that we might feel some hesitation in referring to it. The grower whose market is so distant that he

has to pack and dispatch overnight, would choose the early morning for cutting, while the more fortunate grower who can pack and dispatch in the early morning and still catch his market, would cut his blooms in the evening. The point, however, is that the cut bloom must be stood in water for several hours, the ends of the stalks, 2 or 3 inches, being immersed, the heads being well elevated, held in position by the tank divisions, which are usually strips of wood laid across.

The blooms should not be left on the plants until fully expanded, but have something left "to come" after being cut, the stalks, of course, being long. They should be graded, for one or two inferior blooms in a parcel will very probably reduce its value considerably, most buyers being cute enough to seize any excuse to buy cheaply and take full advantage of a weak sample. To establish a name for careful grading and good packing is the aim of every grower, for this is a valuable asset. He knows it is to his interest to take every precaution to keep to a high standard, and to use special precautions against bruising or any other damage to his consignments *en route*. Those precautions are simple and effective. The boxes used are 3 feet long, 8 inches wide, and $4\frac{1}{2}$ inches deep; these are lined, amply, with white or coloured tissue; then a roll of paper is made to lay like a pillow across the box about 1 inch from the end; on this roll the blooms are laid, the calyces resting on the roll, and a wad of cotton wool interposing between the blooms and the end of the box. Having laid this row, the blooms close together, a similar roll is made and laid across their stalks, to take the second row, and so on till the box is half filled, when the process is repeated, beginning at the other end of the box. The stalks cross each other in the centre, which allows of the lot being fastened into position by a cross stick which fits tightly across the box and is pressed down upon the stalks. Short of being turned upside down, this removes all danger of their being bruised or damaged, for the stick holds them in place with a tight grip, and it must indeed be arrant carelessness or very rough handling that can work them harm.

Second grade blooms may be similarly packed, a larger number going to each box, but several growers bunch these much the same as chrysanthemums are bunched, a dozen in a bunch placed flat,

either as six twos or four threes. If for any reason more than one variety have to be packed together, then it is just as well to try and arrange that the colours are such as not to neutralise or kill each other, because the box may be " on show," and such points are not without effect.

CHAPTER VII

OLDER PLANTS, AND INDOOR PLANTING

If it is considered advisable to carry on for another year with plants that have gone through their first year, it is perfectly feasible and is, indeed, largely practised. We did so ourselves for many years, but have come to the conclusion that it is better and more economical to work on young stock every year, first because it fitted in better with our ordinary routine and also because we invariably got better results. Other growers' experiences may be different, and these we respect, not for a moment claiming that our methods must of necessity be the better. But having said so much, we do not want readers to imagine that we consign our plants to the rubbish heap directly their season is ended, for our practices are far less iconoclastic. We take care of them, nurse them in fact as long as we keep them under glass, and then, very early in May, we plant the majority of them in the open air, principally for the purpose of layering them, but also for the very satisfactory cut bloom they give from the middle of August throughout September.

When it has been decided to carry plants on to a second season, the fact must be known early, in which case the grower would not be so likely to let his plants go all out, but would keep something in reserve. From the moment the flowers are over the plants must be taken care of. The carnation is such that it will resent neglect at any period, from the time it is put in as a cutting till it has done with life for good and all. We remarked, earlier on, that a plant once allowed to fall into ill-health might just as well be thrown away, and that is the nature of perpetual carnations, for seldom will they again make good when once run down. Directly the season's bloom is over they must be enticed to take a short rest, though if left to themselves they will plainly show that they mean to keep going. Remove them to a cold house, cut away all useless stalks or wood, and remove any yellowing leaves ; but though meting out to them hard treatment, nurse them. Then after a week or so they will need to be turned out of the flowering pots, the exhausted earth shaken away, the roots trimmed and re-potted into good soil

in much smaller pots. For a few days after this keep them close and shaded, but immediately the roots make a start revert to hardier treatment. They will then come gently on and a sharp look-out must be kept for green aphis, for at this time of year—May and June—they can be terribly destructive. The first week in July should see them back once more in their flowering pots, after which they will be subject almost to the same treatment they were given the year before.

Naturally they will bloom earlier than the young stock, and because of their more advanced stage it is well to begin feeding them at the beginning of August, either with liquid manure or with special fertilisers, or both alternately. They will demand the same careful watchfulness, the same protection against disease and pests, the same minute attention to cultural details, and when ready to carry indoors it will be found that a good crop of bright-coloured flowers will be maturing for the early market. Thenceforward the treatment of the two-year and the one-year stock is identical.

Indoor Planting

So far, we have dealt fairly exhaustively with cultivation in pots, because most growers confine themselves, as a matter of routine, to pot culture, but there are many thousands of plants increasing in number every year that are grown in indoor borders or on the benches. Where suitable structures are erected this method will supersede pots altogether by reason of the great economies it effects. The treatment for planted carnations is in all its main essentials very similar to that obtaining with pots, though in watering and in fumigating it has its peculiar difficulties. A bed is not so directly under control as a pot, and we consider that no one ought to attempt the planting-out system until he has acquired a fairly intimate knowledge of the carnation and its peculiarities.

The soil, which should be clean and sweet, not left over from tomatoes, but renewed, should be manured and further be enriched with crushed bones. The distance from plant to plant in the rows should not be less than 1 foot, with 1½ feet between the rows. Each plant must have a stake or some other means of support. Light, air, and moderate warmth are still as important as ever, and

the temperature should be equable. The watering is more tricky than in pots, and calls for considerable discrimination—the watering-pot or hose must never get into the hands of a novice. No insecticides can be syringed on to the foliage to prevent pests, for they would run down to the root and ill-health assuredly result. A slight spraying is occasionally possible, but more reliance has to be placed on fumigation and syringing with clean water.

There is no doubt that this system of growing gives of the best. The flowers are on the whole larger and more numerous and more lasting. A large bed of them is an impressive sight as long as all goes well, but sometimes eel-worm, wire-worms, and other pests of the soil spoil the fair face of the picture. For some of these, the ordinary traps of a piece of potato or carrot may prove successful, but the greatest possible care should be taken to free the soil from them before it is brought into the house. Sterilising is better understood than it used to be ; soil insecticides are plentiful and reasonably cheap, and the prudent grower sees to it that he does not deprive himself of the facilities offered to rid himself of such potent enemies.

Conclusion

Those who have read so far will be under no delusions as to how to grow carnations. There are no secret formulæ or practices, no sleight-of-hand, no profound mysteries, no particular elements of chance ; nothing but sound, reasonable methods, intelligently and untiringly applied. Common sense is the sole guiding power. Your plants have enemies—you must destroy them ; they need food—you must feed them ; they demand light and air—you must see that they get them ; they want only a moderate heat—you must control the boiler. As stage succeeds stage so do the immediate needs vary. The rooted cutting is treated as an infant ; the young plant in the first strength of untried youth is encouraged ; the older plants are nourished and sustained. Cleanliness will promote health ; health will ensure success. But the man who is spasmodic and uncertain, who is not prepared to give his first consideration to his plants, who one day coddles, the next day neglects them, him we beg, for his own sake and for the sake of others, to leave carnation growing severely alone.

CHAPTER VIII

BORDER CARNATIONS

THE tremendous impetus given to the cultivation of the carnation by the advent and exploitation of the perpetual flowering varieties has not been without its effect upon the fortunes of the parent stock—the far more better known and even now most widely grown border carnations. This type, though somewhat overshadowed, perhaps only temporarily, by its more obtrusive offspring, has lost none of its popularity, and none of its virtues, but, on the contrary, has added to both. It is, and will remain what it has been for centuries, the " good old English flower " ; its cult will never die out, and the centuries to come will cherish it as warmly as did the elegant courtiers who hovered like butterflies about our " Good Queen Bess."

" This fairest of flowers," extolled by the world's greatest poet more than three hundred years ago, is as full of vitality as ever, and every year its ardent devotees (we call them specialists nowadays) who labour so earnestly and assiduously for it because they love it, are improving it in the right directions. Having due regard to its outstanding qualities, they sacrifice nothing of its complete hardiness, or its splendid form, content with its old and regular outline, its exquisite perfume and its prodigality of blooms, but adding new shades, new combinations, new perfections, and increased strength, as become those who have very near to their hearts the welfare and progress of this their favourite flower.

In our esteem for the border carnation we hold ourselves as second to none, but this would not alone justify a lengthy reference to it in this work. Had we not a profound faith in its commercial value and possibilities we should have passed it by as we pass by many other good and useful garden plants which do not possess that qualification. But more than with most plants the commercial possibilities of the border carnation do exist ; existed long before our time, and can boast a far longer record than almost any present-

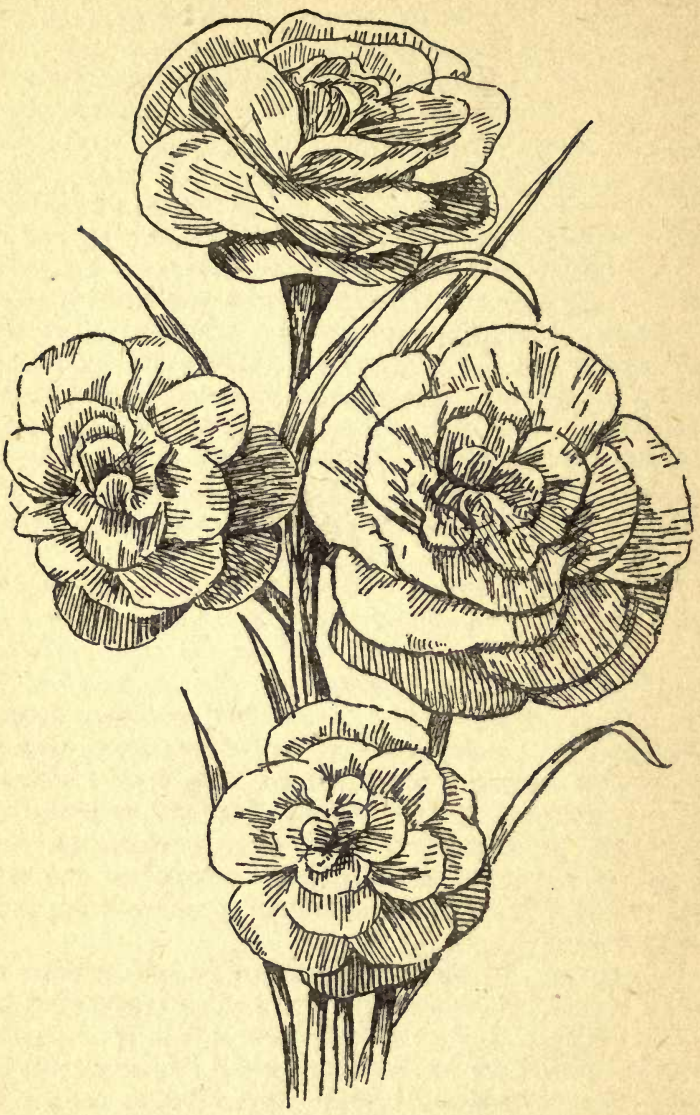

FIG. 9.—Border Carnation

day market plant. In the general estimation of those who possess gardens, it may take second place to the rose, both in popularity and in the number of plants annually grown ; but if so, it is a very close second, and this is not to be wondered at when we consider how much more satisfactory it is to grow, how small the amount of attention it needs, and its comparative freedom from pests. Being in the closest possible touch with the trade, we can say this : that the demand for it, from every quarter of the United Kingdom, shows no sign of diminution, but rather an increased demand from year to year.

Hybridisers do well in not sacrificing " hardiness " to any other quality, for that stands out as, perhaps, its greatest asset. We do not know of any division of this country (though possibly there may be some localities) where the border carnation will not thrive, or where established plants will not withstand the rigours of winter where other " hardy " plants, other than herbaceous, will succumb. Its lance-shaped, grassy foliage, well protected, is not so susceptible to frost as is the softer and more delicately organised foliage or leafage of so many plants which do not die down every year. Hybridisers are also doing great service by extending and prolonging its season of blooming, for, years ago, one of the principal reasons against its more extensive use was the brevity of its season, which could only be said to last throughout June. Patient and indefatigable work has prolonged that season until well into September, and that is an immense gain—in fact, it almost reaches the limits of possibility in what is so ostensibly a " border " plant.

This extension of the time limit adds more than anything else to its real commercial value, and is responsible for the markedly increased demand for plants. It can now be employed in schemes where its erstwhile fugitive character made it " taboo," for the gardener may now depend upon a display of bloom that will not fail him throughout the best summer months. Consequently he can without hesitancy plant more largely of a flower which he knows to be held far higher in esteem than the great majority of summer bedding plants. There yet remains something to be done toward perfecting this continuous blooming characteristic, but we are quite certain that complete success will be attained,

and that neither at the expense of hardiness nor any other essential established quality.

There is yet another reason why its popularity is firmly established and still growing: it altogether outvies the present standard of perpetual flowering varieties in its range of colours. Possibly its young and vigorous offspring will in years to come get on level terms with it, may even dispute the supremacy, but that is not yet, nor can we see any signs that it will be for some years to come. At all events up to this winter of 1921, though new colours and shades and bizarre combinations have been added to the perpetual varieties, the old border carnation, in its later forms, is yet supreme in this all-important particular.

With new forms there comes new stamina, and this is in a way calculated to increase the value of the cut bloom. Formerly, there was a weakness about the neck and a corresponding weakness in the calyx, which depreciated the value of the flower, and there was a measure of unreliability about it. With a weak neck and a bursting calyx the flower was under suspicion and often ragged and unlovely. These glaring weaknesses are being improved out of existence, so that the only disadvantages possessed by the border carnation as a subject for cutting for market are rapidly disappearing.

In its season, no flowers on the market meet with a readier sale if a wise selection of varieties are grown. The markets have their likes and dislikes, and it does not necessarily follow that some of the more æsthetic varieties which a connoiseur would gloat over would prove to be good sellers in Covent Garden. It is the more decided colours which generally find favour there—crimson, scarlet, pink, yellow, white with a few picotee edged. Anyone planting for the cut blooms should select these colours, or at least consult his salesman as to what will sell the best.

What we have said so far justifies our opinion that this type of carnation has a very considerable commercial value, and that this opinion only needs emphasising because of the strong advocacy for the perpetual flowering varieties in the present day. But the two types do not clash. Though the latter may be grown and is in fact recommended for outdoor summer culture, it will not, it cannot, take the place of its parent as a " border " subject. Our

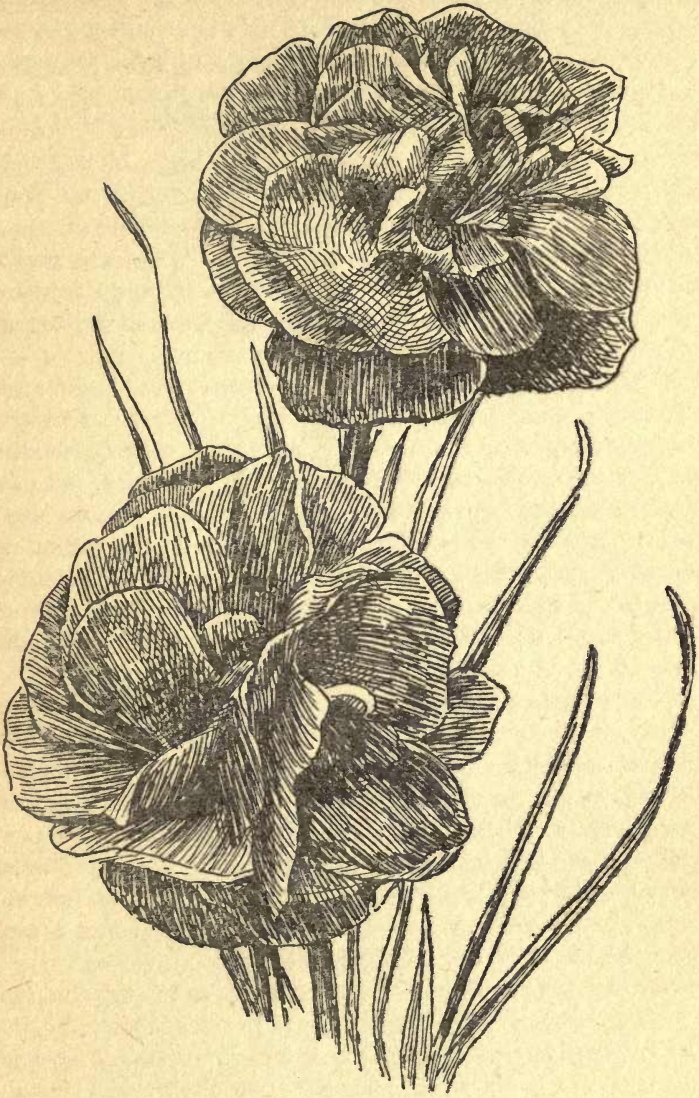

FIG. 10.—Grenadier

partiality for the one does not detract from our appreciation of the other. Both have their place and are alike important to the trade grower, so as we have dealt at some length with the propagation and cultivation of the one, so shall we go on, though with greater brevity, to deal with the propagation and cultivation of the other.

CHAPTER IX

RAISING BORDER CARNATIONS FROM SEED

THE border carnation is not difficult to raise from seed, and those who care to dip into the lucky bag and be content with what the gods send them will find this a very interesting occupation indeed. There is always the chance of a streak of luck, and a real " gem of the first water " may be discovered, but though this does not often happen some gratifying results may reasonably be looked for by those who have wisely procured the best strain of seed. We have ourselves grown many beds of seedlings for the purposes of the cut flower trade, and had we possessed the facilities and time for exploiting them could from time to time have distributed some sterling novelties ; but though the qualities of the selected blooms were all that could be desired we were obliged to content ourselves with layering a few plants for our own use, or to supply to clients who, wishing for them, were content to purchase them unnamed.

The great drawback to the raising of seedlings is the element of uncertainty as to the proportion of undesirable plants. A great many are singles ; many others are a useless semi-double, and all these have to be weeded out. An expert can usually " spot " these at quite an early stage by the " weediness " of the grass.

There is always, too, a certain percentage of flowers exceedingly useful for cutting, but lacking in almost every quality that would commend it to the carnation specialist. No trade considerations would warrant their retention and propagation, so, as no reputable grower would perpetuate third-rate stuff, they are consigned to the fire after finishing their season of flowering. But there yet remains a residue worth taking care of, and it is this residue which is the centre of all our interest. If out of one hundred seedlings there eventuate five really good and distinct varieties, then the game has been well worth the candle, and all the time and labour given to them justified.

The first thing to do is to procure a packet of the choicest strain of seeds from a specialist source. They will doubtless have been saved from the finest named varieties, and it is only from the

" very best " that the very best may be reasonably expected. The small difference in the cost of the seeds is not worth considering, for the *value* received is many times that of the seeds gathered promiscuously from an ordinary collection. When one buys a " specialist's " seeds he buys with it the guarantee which a reputation can give, and this is always something, for no specialist is lightly going to jeopardise his reputation by supplying merely ordinary goods.

The seeds may be sown at any time between January and May, but we fail to see any special advantage in sowing too early, seeing that the seedlings do not bloom the same year, the object being only to raise strong, vigorous plants for planting out in September. To have a quantity of young seedlings to deal with in February is to occupy space in the houses so badly needed at that time of year for many other things. It also means that they have to be carefully negotiated through the worst weather and so make demands upon the growers' time and attention when he can less afford to give them than, say, a month or six weeks later. In practice we find that by sowing early in March we can get good, strong plants for planting-out before the beds can be spared for them ; and if a date be chosen for advantageously planting them we prefer *not* to plant until the early part of September, unless exceptionally favourable weather tempts us to plant a week or two earlier.

Sowing the Seed

Supposing we intend to sow during the first week of March, we mix a compost composed of one half sifted loam, one quarter sifted leaf-mould, and one quarter sifted decayed vegetable refuse such as may be procured from an old heap of decayed spear-grass. With this we mix a sufficiency of coarse silver sand to keep it free and open. We then clean and crock our seed pans, or, failing pans, boxes not exceeding 2 inches in depth, fill them level full of the compost, pressing it down with a flat piece of wood, so that the surface is perfectly even. A great bulk of compost is not needed, seeing that the seedlings will occupy it for a very short period, and that is why we recommend shallow vessels ; apart from this, it is far more difficult to prevent the damping-off of seedlings in a deep

than in a shallow soil. This is to be accounted for, most probably, by its better mechanical action, viz. quicker drainage and heating.

When the compost has been pressed and presents a perfectly even surface, it should be well watered with tepid water applied through a fine rose, sufficient to saturate it through and through, then allowed to stand for an hour to drain. It will then be in good condition to receive the seed, which should be evenly distributed over its surface.

Thin sowing is essential—a quarter of an inch should separate seed from seed, and any which has fallen nearer together should be adjusted to that distance. Then cover very lightly with the finer particles from your compost, not unduly burying the seed, but just enough to hide it well. Stand the pans or boxes on a gentle bottom heat, or on a stage in a warm house, covering them with sheets of glass on which brown paper may be spread to exclude the sun.

Now arises an important point, the observance or non-observance of which may have good or ill effects upon the future constitution and well-being of the plants. The border carnation is one of the hardiest of plants. It does not require heat; more, it resents a high temperature except that which naturally comes to it in the summer when it is in the full vigour of its growth and in the fresh and open air. It will stand but very little artificial heat, and hates coddling, asking for nothing but to be hardily grown from its beginning. Thus it is imperative that the seed pans be watched, and directly there is a sign of movement, which may be looked for a week after sowing, remove them from the bottom heat or the heated house and give them cooler conditions even before the seedlings have fairly penetrated through the soil. Even though this may impose a slight check upon them, the germination will have been secured, and the seedlings will quickly adapt themselves to the new conditions without having to suffer in any way from the old. The heat, having served to that extent, you must ask nothing further of it, nor accept anything further from it.

Transplanting

When the first two leaves, the seed leaves, have fully developed and the beginnings of another pair are visible, the seedlings should

be transplanted into other pans or boxes, and each plant allowed 2 inches. Still let the vessels used be shallow, and use a compost similar to that used for the seed pans, only add a little mortar rubble passed through a fine sieve. When this is available there may be a corresponding diminution in the quantity of coarse sand. The drainage provided must be clean and efficient—a very important

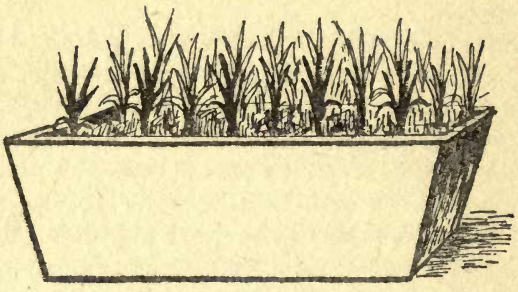

FIG. 11.—A Pan of Seedlings. Border Carnation

point which we never weary of urging. Press the compost more firmly than for seeds, though between "firmness" and "hardness" it is necessary to discriminate. The soil may be so hard as to be impervious to the young roots, or it may be so loose that they will have no grip upon it, but they will enjoy working their way through a reasonably firm soil and will grow strong and fleshy in the process. There is a very close analogy between the growth of the hidden root system and that of the visible top.

We are now at the beginning of April and the newly transplanted seedlings will, perforce, still be under glass, either in an unheated house or in a frame. For a week the sun should be kept off them, and a too-free circulation of air be prevented; probably a few sheets of newspaper spread over them would be sufficient protection in either case, but after a very few days they should be gradually exposed both to sunshine and air, more in keeping with their native hardiness.

As they become established and begin to put on growth, they must, if in a greenhouse, be removed at once to a cold frame, where the lights should be taken off during the day, and a current of air all night admitted by putting a wedge under each light. At this stage,

the expert will be able to detect those plants likely to throw single flowers or be otherwise inferior—the quality of the " grass " will be his guide, and he is not likely to make many mistakes. No hard and fast description of inferior plants can be accurately and intelligibly given in writing—it is only actual experience that will enable a grower to " spot " them readily ; all we can say is that the foliage is " weedy " looking, generally thinner and more puny than the good ones, lacking that firm and glaucous character which the foliage of young carnations should carry. Years ago some unprincipled raisers of carnations used to send these " Jacks " to be peddled around the country, unfortunately with names attached to them, but we believe this unscrupulous traffic has been nearly stamped out.

But to return. By midsummer the young plants will, if they have done well, fully occupy the 2 inches of their allotted space, and it is not advisable to leave them to become crowded. They will, of course, by this time be standing in the open, and it is the practice of some growers to leave them in these original boxes all the summer. This is not fair to the plants ; it does not give them a chance, and those who are anxious to get the best out of them will do well to follow one of three alternatives : either to pot them off into 60's., using a compost similar to the last, but with bone-meal added ; transplant them into other and slightly deeper boxes, giving them 3 inches of space ; or, more economical, transplanting into a temporary bed of prepared soil, where they can receive daily attention. For limited stocks we recommend the potting, for stocks of say 300 to 500 the box method, and for larger stocks the transplanting into temporary beds at 3½ to 4 inches apart.

The transplanting into more permanent quarters in September is a matter of routine. The soil must be porous and well dug. Manure should be worked in, and mortar rubble, if available, though not in large quantity. For convenience sake, and to prevent unduly treading on the bed when tying up the growths or cutting the bloom, it is not advisable to make the beds more than 4 feet wide, so that the centre may be easily reached from either side. We are speaking of nursery beds when we say plant at 8 or 9 inches apart in the rows, with 1 foot from row to row. Private growers in planting named varieties, or nurserymen who plant for stock

purposes, need to allow much more space, but the plants we are treating of are seedlings, the greater proportion of which will do one year's service and then make their exit. The space named is really all a grower can afford, and, we think, as much as the plants actually need.

CHAPTER X

LAYERING

LAYERING is the universally adopted method of increasing and perpetuating named varieties. The operation itself is charming in its simplicity, and, like the budding of roses, is easy enough to those who know how to do it. There is no trick, no mystery, no difficulty ; just two or three points to be remembered and observed.

The best time for layering is early in July, though where there are thousands to be layered the operations continue into August. It is advisable to fix a definite date, for the old instructions for layering " as soon as the flowering period is over " no longer hold now that the said season of flowering is growing more and more prolonged. There is this much to be said in favour of layering as soon as the " layers " are ready, and that is that the more time we can give them the more roots will they make before they are removed in the autumn. Even the novice will admit the cogency and value of this.

A healthy plant has not only the central growth which, throwing up a stalk, terminates in blooms, but also a number of other growths whose business it would be to throw up flower stalks next season. It is these that provide the " layers." There may be up to, or above, a dozen to a plant ; we have layered neglected old plants of the Crimson Clove variety with as many as fifty, but that number does not occur on young plants. Our illustration Fig. 12A represents a plant with the spent flower stalk removed and growths duly layered. These, all emanating from the one old root, are skilfully placed so that each will enjoy equal chances.

Layering is neither more nor less than a modified and safer way of taking cuttings—safer, because the " layers " or " cuttings " remain attached to the parent plant until they have established an independent root system of their own, and can thus enter at once, completely equipped, upon a separate existence when severed in the autumn. The " safeness " of the method is further demonstrated in the small percentage of layers which, for some reason or other, have failed to root, for they simply remain in their attachment

as integral parts of the old plant and go on for another season. We can easily see how the necessity for taking cuttings in the ordinary way is obviated, and how very seldom propagators have occasion to resort to it.

How to Layer

Let us now refer to and make clear the actual process. We have a bed of plants which has been hoed and kept clear from weeds. The growths are plentiful, healthy, and vigorous. We furnish ourselves with a sharp knife (a budding knife is the most convenient) and a quantity of layering pins, which are like plain hair-pins, made of galvanised wire. Also, a goodly supply of prepared soil is provided, and this should be in equal proportions of loam, leaf-mould, and sand. These form the whole of the equipment, excepting a trowel. Scrape away the loose top soil from around the base of each plant and replace it with an equal depth (1 inch) of the prepared compost. Select the longest growths first, those that when laid down will extend the farthest from the plant; remove a few pairs of the lower leaves, not pulling them but cutting them close off with your knife; then, at the most convenient spot, cut into the centre of the wood and pass your knife upward through a joint, after which arrange them at regular intervals to form a circle and peg down firmly into the prepared compost. Cover the denuded portions of the layers with an inch or two of the same compost and see that it is pressed firmly down; then, if sufficient growths remain, make another tier in the same way, or if but a few, dispose them to the best advantage so that a mound will be formed in which every layer is given equal chance. Our Illustration (Fig. 12) clearly depicts the cut or "tongue," and also the method of pegging down the layer. Very little practice is needed to make the veriest tyro efficient in this simple operation.

Fig. 12.—A Layer

Immediately all the growths on a plant are layered and covered, they should be watered, for the presence of moisture in the interior of the mound will cause the layers to root quickly and strongly. There will be no necessity for shading them, seeing that their full vitality is maintained by their parent, so that they are as indifferent to sun as they were before being touched ; but, all the same, it is very helpful to them if during dry weather they can be kept regularly watered. They must also be kept free from weeds. We have known many instances where, through pressure of other work, the mounds have been allowed to become literally smothered with weeds, which taking away all the moisture from the layers, have

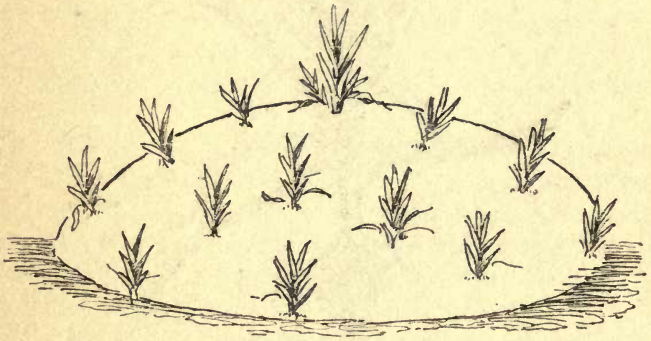

FIG. 12A.—Layering

prevented their rooting. After going to the expense and trouble of layering, it seems rather foolish to nullify the work for the sake of a few hours' weeding.

Early in October the layers should be sufficiently rooted to make a start in life for themselves. Gently insert a fork beneath them and lift, shaking the soil away and exposing the young roots. You will find that these have all, or nearly all, been formed on the "tongue" of the upward cut. The severance should be made about 1 inch below this, and care should be taken not to injure the young roots. Any layers without roots may be left to remain with the old plant. The rooted layers, now really plants, ought to be strong and of high promise ; and we should have pointed out that at layering time all puny, unhealthy, or other unsatisfactory growths,

should have been removed from the plants, giving to the healthy layers all that the parent plant was capable of giving; thus, and thus only, can we make sure that our stock is as vigorous and good as it ought to be.

FIG. 13.—A Well-rooted Layer

CHAPTER XI

PLANTING OR POTTING?

HAVING now a goodly stock of fine, young, healthy plants, we are confronted by the question of how best to winter them. Shall we plant them out in the beds, trusting to their vigour to withstand the winter, or shall we give them the advantage of a partial shelter till spring? The old method—and it was a good, old, safe method—was to winter them in pots (two plants in a 54) and stand them in cold frames or in a cold house until the end of March. This plan is still followed by growers in districts where the rigours of winter are something to reckon with, and this extends over a very large area, almost everywhere north of the Thames, except a few favoured localities.

The other method—that of planting straight away into the open—is generally adopted with impunity throughout the Southern Counties. So long as safety is not in the balance, it is not only the more economical, but is also the better plan, because the plants, put out in October, immediately establish themselves and are ready to respond to spring conditions and begin their year's work before it is considered safe to transfer to the open ground those wintered under glass. But "safety" is a great consideration, and though it is our practice to plant out in October, we do not commit ourselves entirely to it. Nor could we, for two reasons. The first is that if the winter is mild and damp we lose a certain number of plants through "damping," and if the winter is sharp and dry we lose a few by frosts, and we like to have enough plants in a safe place to fill up the gaps. But our second reason is the greater. When we plant out we make it as early as we can. Throughout October and November orders for plants are coming in, and again in February, March, and April. We do not care to deplete our beds or have great gaps made in them, so we put a large proportion of the rooted layers into pots, executing all orders from them, and filling up any vacancies in the beds in the spring. What few plants are left over at the end of April we then plant out. That is an adaptation of both methods and is very well suited to our particular circumstances.

Planting

Now as to planting. With our scarcely veiled enthusiasm for the border carnation, we naturally give it a prominent position in the nursery. It is not planted away out of sight nor in odd corners. We do not "hide its light under a bushel," but select for it a position where its merits can be displayed; in fact, we make the plants advertise themselves, and this they can do better

Fig. 14.—A "Layer" Potted

than any advertisement of ours can do for them. Throughout the early summer we hardly get a visitor who is indifferent to the lure of the carnation beds, and many a hundred orders have been booked for plants without any solicitation from us. Visitors whose thoughts have not run on carnations have been impressed when seeing them in bloom, especially the outstanding varieties, and have suddenly discovered that they can find a spot somewhere in the garden where they could be fitted in. Approached in the ordinary way in the autumn by means of a catalogue, the appeal would leave them cold, but when this appeal takes the form of a perfect flower, rich or dainty in colour, exquisitely perfumed, displaying its hardiness, and the ease with which it can be grown,

it is irresistible, for it speaks with a voice compared with which our eloquent eulogies are but faint and cold.

The soil in which we grow them is but indifferent in character, though we are improving it year by year. It is light and gravelly, but we add heavier stuff with crushed bones as often as we re-make the beds. When they are originally prepared we dig as deep as we can, adding a light dressing of old mortar rubble because the soil is deficient in lime. We keep a store of this commodity by us, and are always keen to avail ourselves of an opportunity for procuring a few loads, for it is of great value.

The beds are made 4 feet wide, raised several inches above the paths, and this ensures quick drainage. We have seen beds planted on the level, in soil less free than ours, and during a wet winter water has stagnated about the plants *and frozen there*, the consequent loss of valuable plants being certain.

As to soil for carnations generally, we are little inclined to dogmatise, but we do insist upon good and deep digging and cultivation. There is scarcely a soil upon which we have seen them refuse to grow, and have ourselves grown them by thousands on the Lancashire coast around Southport, where the staple soil is pure sea sand; and we have grown them in equal numbers on the heavy clay found at the foot of the Cotswold hills. In the alluvial soils of the Thames Valley, where it has the consistency of putty for one half the year and the closeness of bricks for the other half, it has thriven marvellously, and plants from that district have been distributed north, south, east, and west by us, and now that we are on the East Coast with light, brashy, gravelly soils we do them equally well. So who, after this varied experience, dare insist that a carnation *must* have such and such a soil? Naturally, it has its preferences, and if we were in a position to select our own soil for them we should select a fairly heavy loam, not too consistent, but containing a fair proportion of silica. It need not be rich with organic manures, but lime, either as rubble or in the form of crushed bone, should be supplied. Such a soil will produce short-jointed, vigorous growths, making splendid layers, and, eventually, ideal plants. Let us here and now advise whomsoever it may concern to plant none but strong, vigorous plants, for from weak and weedy layers nothing can come but keen disappointment.

Keeping in mind that all our plants have to be layered, and that the layers spread themselves out, it would be a grave error to put the plants too closely together. Anything less than 1 foot apart in the rows, with 15 inches from row to row, is out of the question, for it would unnecessarily cramp the operators and crowd the layers, especially where the plants were well grown and each had a number of growths. Not only this, but in a nursery there must be room to move about among them for sticking, tying, disbudding, etc., so that the space signified, though perhaps ample does not err on the side of generosity.

If the soil in which you are planting happens to be on the heavy side, there will be little need to firm your plants down, for something may be left to the settling down of such soil; but in lighter soils it is very essential that they be well firmed when planted, their after-growth and well-being depending upon it. Do not plant too shallow, neither plant too deeply, but if you sink your plants so that the first pair of leaves are at the ground level, you cannot do wrong. Almost invariably any leaves partly buried will soon part from the plant, and that is always a pity, for foliage always has its own functions to perform, and should not be let or hindered. On a young carnation the foliage never exceeds the requirements of the plant, and care should be taken to preserve it rather than to injure.

CHAPTER XII

PERPETUAL BORDER CARNATIONS, AND OTHERS

In the preceding pages we have had occasion to make certain references to the gradual lengthening of the season during which the border carnation will bloom in the open. We have perhaps been more or less guarded in our observations, because we desire above all things to keep to the bedrock of fact rather than of possibilities or visions. For a moment or two we would like to more particularly direct our observations to this remarkable and promising development, which in the course of a very short time must, if it justifies itself, prove of considerable commercial value.

We have not yet sufficient evidence to commit ourselves to all that is claimed for this improved race of border carnations; we express no doubts upon it, but that this is a development to be watched must be apparent to all. For many generations, running back into centuries, it has been what we have known it to be in our own times as regards the duration of its season. This may have been due to our own conservatism in dealing with it, and also that of our forbears. Traditions were woven closely over our cherished flower; at all costs we considered we had to preserve its faultless form as a sacred trust committed to us; we guarded it with a whole-hearted devotion which forbade our playing fast and loose with it, or experimenting outside fixed limits. We concerned ourselves mainly with improvements as they affected its substance, its colours, its freedom, its vigour, its powers for resisting disease, and the strengthening of its flower stalk and calyx. It seemed sacrilege to go beyond, and we stealthily looked askance at the American perpetuals. Of late, others, perhaps not less reverent, but certainly less conservative, less bound to tradition and more greatly daring, have broken through the crust and directed their efforts toward improvement in quite a new direction, and that with the greatest promise of success. What they have achieved is already startling, and the auguries for the future are undoubtedly gratifying.

Yet this development is a perfectly natural one, and what might have been expected. It has already happened with roses, and the

results all round have been most felicitous. The advent of the hybrid teas, with later developments, introduced to our gardens a race of perpetual blooming roses which has popularised them far beyond the wildest dream of rosarians of half a century ago. It may so happen with the border carnation with equally felicitous results, for the cases appear to be analogous. The development,

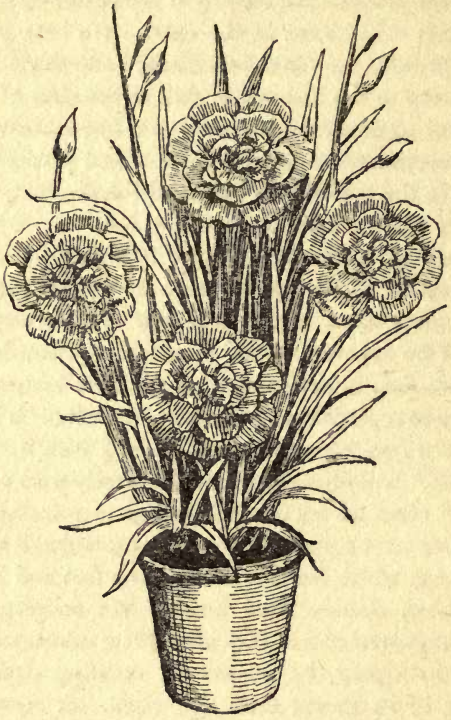

FIG. 15.—Border Carnation in Pot

therefore, should arouse no susceptibilities among the cult (among whom we are proud to class ourselves), but should rather appeal to them, for that it opens up a vista of increased usefulness and value for the object of their solicitude.

The " Old Guard " will very rightly consider it a duty to zealously protect all that for so long a time has been held sacred, so that not one jot or tittle of the old time excellencies shall be sacrificed

to the newer qualities. That much we may rely upon, and it will be a guarantee that as the new class increases in number, as it now shows every disposition to, the new comers will be judged by the quality of their flowers alone, and not by the longevity of their season. Subject to this we believe the perpetual border carnation will prove a commercial success, and that raisers of stocks will do well to give it considerable attention. Up till recently the carnation has been looked upon as a flower useless in the garden or the market after July. That has been the only objection to it, and has militated greatly against its more general planting; but with that gone there remains no other, and the increased demand for plants is a dead certainty.

Picotees must not be confused with Fancies. Their white or yellow ground should be clear, and the edging of the petals with a brighter colour clean and regular. For some reason it has never become a really popular market flower. It is ofttimes difficult to account for market standards, and this is a case in point. Prettiness, of itself, does not appear to be a marketable commodity, for if it was the picotee would long since have been a prime favourite. Still, the growers of carnation plants will find there is a steady demand for picotees amongst their clients, both for the white or yellow ground, and if no one else grew them, the exhibitor would still have to. In a general collection of carnations, the radiant distinct edgings stand out clearly and add a vivacity and attractiveness which are all their own.

Bizarre and flaked carnations might more simply, for all practical purposes, be called striped carnations. Fancies, very similar to them, are not so distinctly striped, but suffused, striped, and edged with colour. We have always found the latter to be as suitable for the border as any carnation can be, but the two former must, for utility, be classed with the picotees.

The old Crimson Clove stands in a category by itself. It has been put there by the traditions and affections of more than one generation. It will remain a prime favourite long after some of the beauties of to-day have given place to others. It is being improved, sometimes under new names, but whether in the old type or in the newer stocks the old Crimson Clove will remain the old Crimson Clove, no matter what other name you give it.

Of course it accords with the laws of progress that the old-fashioned, unimproved type must give place to the newer and the better, and there are existing forms which we already greatly prefer ; but they carry the same old valued characteristics as the type. The powerful perfume is unabated, its deep crimson hue is as deep as ever, its outlines are the same, its healthy vigour has not been sacrificed ; only its blooms are stouter and larger and " improved," without a deviation from the type. Naturally when we now propagate the " old " Crimson Clove we do not use the old but the newer forms. Soon, a few old-fashioned enthusiasts will be setting out on a pilgrimage to rediscover the real old favourite of their fathers, but they will not have far to go, even though they delay their setting-out for a score of years. They will find it in every English village, in nearly all the cottage gardens where their perfume has throughout so many years made the evening air redolent. And if they look closer and closer they will find the roots firmly embedded in the hearts of the cottagers, who year after year take the " slips " and rejuvenate and increase their stock, gladly giving plants to their friends and neighbours who lack them.

Malmaisons

Malmaisons are a very old and well-known type of carnation, characterised by possessing stouter and thicker foliage and large, massive blooms borne on stout stalks. It is more a plant for the greenhouse than for the border, for though it will grow in the border, its blooms are seldom perfect unless opened under glass. In fact, it demands almost the same conditions as those given to the perpetual flowering carnations. The old varieties stood out as giants compared with the ordinary border varieties of their day, but the disparity between them is being gradually wiped out as the latter increase in size and substance.

We always grew them in pots, either from cuttings or layers and looked to get them into their flowering pots by July. We wintered them in a cool vinery, under the vines, on dry, airy shelves and gave them dry treatment until the spring. Before the vines made too much foliage the plants were in bloom, say at the end of April and throughout May. More than one market grower of our

acquaintance specialised in Malmaisons, and did well out of them, but the coming of the perpetual flowering carnations, which have now embraced several Malmaisons, tended to detract from their value as a special line. In a very short time we think that the perpetual Malmaisons will entirely displace the older kinds, and so for all practical purposes we may begin to allow them to merge into that larger class which require the same conditions and treatment.

CHAPTER XIII

"ALLWOODII"

ANY treatise dealing with the carnation would now be incomplete without some reference to that new and useful introduction, Dianthus Allwoodii. Evolved and placed before the horticultural world by a firm which is perhaps the most enthusiastic of all our carnation specialists, this hybrid between the perpetual flowering carnation and the old garden pink established itself almost immediately entirely on its merits; and not only so, but constant and rapid improvements are practically placing it on a plane entirely its own.

In the fusion of the parents the result has not been a compromise—the carnation has yielded none of its own graces and perfections in order to meet the pink half-way, but rather, it is the pink which has come all the way, bringing with it what was its best, and blending it with all that was best in the perpetual carnation, so that in some varieties we get flowers equal to the latter in form, size, and usefulness, with a habit of growth which, approximating that of the pink, has inherited some of the characteristics of the other parent.

The history of this hybrid may well be left for those to tell who know it far better than we do; we have only to concern ourselves with its commercial possibilities, and here we say, at once, that these are very considerable indeed. We can call to mind no other introduction within our experience so promising, nor any plant more likely to become "everybody's flower," because its merits lie not alone in its chaste flowers continuously produced, but in its adaptability to various conditions of soil, situation, and climate, the numerous uses to which it can be put, and the ease with which it is propagated.

With regard to the latter point, we venture upon a warning note. It is no small testimony to the esteem in which it is held, and the belief of the Trade in its future, that it is being intensively propagated—and herein lies a possible danger. It has been proved to be possible that a too intensive propagation can impart weakness and so affect the constitution of plants that it virtually opens the

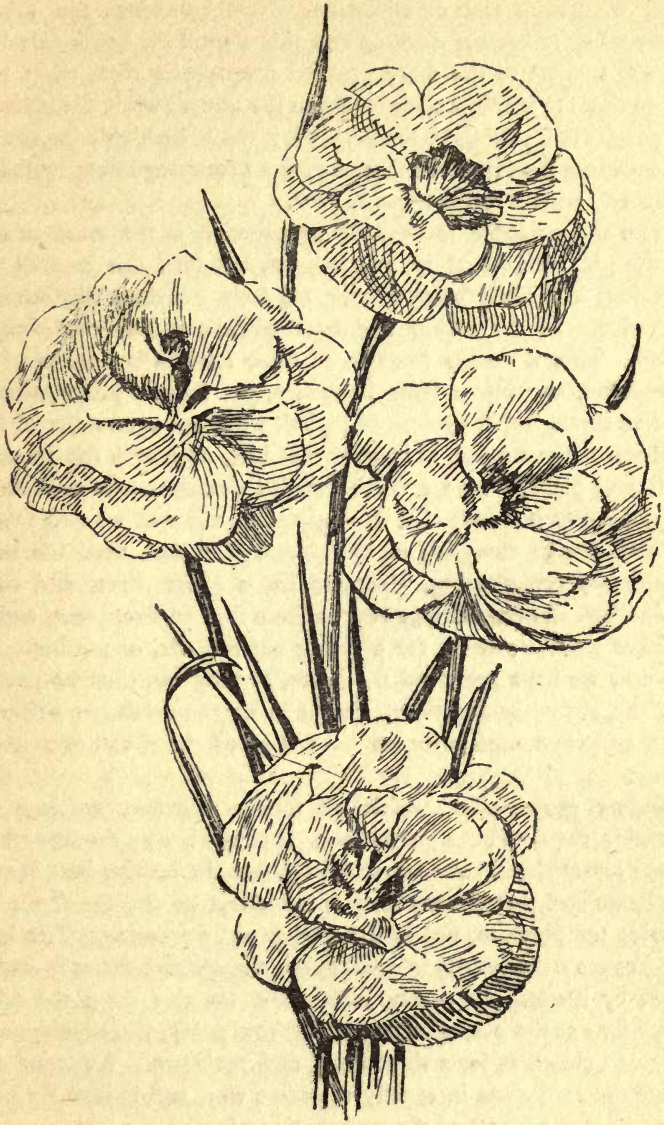

FIG. 16.—Allwoodii

door to disease and deterioration. Now carnations are already susceptible to certain diseases and this should be borne in mind. It will suggest to the more prudent propagators that, while it is up to them to increase their stocks to the utmost while the glamour of novelty still stimulates the demand, it would be highly imprudent to endanger the future welfare of such a promising infant by taxing it beyond what it can reasonably bear.

The more natural method of propagation is the same as that of the pink in June, July, and August, but (and this justifies our warning) it is really being propagated from February till October, inclusive. In the earlier and later months indoor treatment is given. That it readily roots in all these months is a proof of its hardihood, as distinct from hardiness, yet though propagation is rushed through that prolonged period, we know as a matter of fact that some nurserymen, at least, cannot keep pace with the demand.

It will perhaps save a more detailed description as to how to treat cuttings if we say that throughout the summer we strike them in cold frames alongside of violas, and that both need the same treatment, viz. shading, closeness for a short time, and daily sprinkling. These cuttings root in from four to five weeks, and in another week are ready for planting out in beds, or potting. Up till now we have preferred the latter, as they can then be packed and dispatched at any time. So far as we can do so, we prefer to hold all plants until after we have stopped them and seen them break.

Indoor propagation, which we follow whenever cuttings are available, requires but a gentle heat. It is well known that the whole genus resents hot treatment, so we see that the bottom heat is only moderate and that the top heat is but about 10 degrees above the outside temperature, unless it happens to be freezing. The later batches are struck singly in small pots ; the spring batches in stores, pans, or boxes. As nearly as possible we give these the same conditions as the summer frame cuttings enjoy, viz. equable temperature, closeness for a short time, and moisture. We strike the perpetual carnations in exactly the same way, and indeed they are often joint occupants of the propagating pit.

Allwoodii is also an easy subject to layer. Its growth, being denser than that of the carnations, is much more compact, and they cannot

be extended like the latter. Still there is ample space to set each of the growths and give to them there modicum of soil. The whole operation of layering as described for carnations applies in every detail to Allwoodii, therefore we need not recapitulate; there is only this difference, that whereas we do not disturb carnation layers for nearly three months, we can take up Allwoodii in about six weeks after layering and find them splendidly rooted.

The after-cultivation of the plants is identical with that we give to our best garden pinks. We say " best " garden pinks advisedly, because it is a fact that the real, old-fashioned garden pink, once planted, is too often left to itself for a series of years, and

FIG. 17.—Dianthus Allwoodii as Growing

while it is quite possible that its latest successor might prove equally indifferent to such neglect, its much greater value impels us to treat it more generously.

Allwoodii easily substantiates its claim to be almost perpetual flowering; but we would rather put it that from successive batches of plants flowers may be cut in profusion from March till December. We obtain our first flowers from plants struck in April, potted and grown on during the summer without being permitted to bloom, then stood in a cold house in November, where they are protected from severe frost and enjoy an abundance of fresh air. After the middle of January a current of heat is turned on, but so moderate that what the plants obtain cannot be termed " forcing," but only " gentle assistance." Even this, in a temperature not exceeding 50 degrees, unless it be from sun-heat, these quickly responsive

plants will give us their blooms in March and April, not by ones and twos, but in sheaves. We freely admit that we have found 500 plants of "Harold" in 32's. pots a paying proposition at that time of year, for to all intents and purposes every bloom is nothing more or less in appearance than a medium-sized perpetual carnation. Our success with plants lifted from the open ground in November and planted in a cold house and also in frames were a more qualified success, but even so the experiment was worth the making.

In May the young and the established plants in the open beds become a mass of buds. Acting on the advice of the raisers we remove the central bud, with the result that when we cut a stalk we cut a spray of blooms with it, and these we find are easily disposed of in the market. The length of stalk which it has inherited from the perpetual carnation makes it a very acceptable florist's flower, and this is a prime recommendation for any market flower. We have used it very largely in bouquets and designs, and found we could utilise it in place of carnations at considerably less cost to ourselves, and therefore at greater profit. These points are of value to all growers for market.

Our latest flowers, from October till December, are culled from plants in the cold houses or in frames. We purposely prevent the plants from flowering until we need them, and as they persist in their efforts to bloom they come along directly we allow them to. The plants we use for this purpose are young, lifted from the beds and potted up at the end of August and grown on in frames, or as occasion offers, in a cold house. The remnant of our last year's crop were gathered in Christmas week.

The soil we use is that which we described in detail for perpetual carnations, with perhaps a little more lime. Periodically we dust a little lime about them and this dissolves when watered—they appear to appreciate it and it tends to keep the soil sweet and free from worms. It is well to attend to these details, the more so because of its remarkably floriferous propensities, for so abundantly does it produce its blooms that unless well looked after it would rapidly exhaust the soil and would give smaller blooms. Sustenance must be given on light soils more frequently than on heavy.

We have frankly placed ourselves among the admirers of this pink X perpetual carnation hybrid, and that admiration is for its

individual intrinsic merits as Dianthus Allwoodii, and not as a carnation. It is not going, it is not intended to, take the place of the carnation, especially of the border varieties, but it may fairly take its place beside them. It may be, nay it is, equally valuable. The perpetual carnation surpasses it for continuity of bloom; the border carnation remains above it in form and substance; both surpass it, as yet, in their delightful range of colour, and these are important points to which we attach their fullest value. We want to be quite level-headed in this matter, not allowing our admiration to run away with our reason, but with a due sense of proportion to accord to each class those merits and that position which indisputably belongs to it. With us, personal preferences do not count; even sentiment, though it will obtrude itself at times, is at a discount, the only touchstone brought to bear being that of commercial value. This, in turn, rests chiefly on merit. If a thing is really good it will be demanded, and this enhances commercial values.

Whatever Dianthus Allwoodii may or may not be we cannot deny that it has already become exceedingly popular, first because of its utility and beauty, and secondly because it is a genuine novelty and is proving itself to be all that its raisers claim for it. The rate at which it is now being propagated and distributed is a sure guarantee that by and by there will scarcely be a garden in Great Britain without it; that it will become as familiar to the mansion and the cottage as either of its parents, and that being so it commends itself as a subject to be exploited by the Trade, to which the general public will naturally look for its supplies.

CHAPTER XIV

GARDEN PINKS

We have trespassed so much on the subject of Garden Pinks in our treatment of Allwoodii that there remains but little to be said. That little we hope to say. It is a flower long endeared to us by age-long associations, for it has come down to us through many centuries, and is seen in the same form as when in Tudor and still earlier times it brightened the monastic gardens. We have it, too, in better and improved forms, most of which have been acquired within comparatively recent times—important improvements in size and in rich colouring. Allwoodii being a hybrid, we are perhaps not entitled to look upon that as an improvement in pinks, seeing that the carnation claims its share in its production, so we will leave that in a category by itself, as it can afford no real indication as to the probable development of the true pink. We, who had already a considerable experience with the pink before the first great improvement came in, Mrs. Sinkins, can compare its severe limitations of that time with what it has since become, and though its improvements have not been so rapid or so marked as that of carnations, we may not be found too optimistic in pointing out that these, important as they are, are but an augury of what may yet be done.

It is unthinkable that the old form be improved out of existence, that the delicately fimbriated flowers should give place to those of rounded and regular outline, that its greatest asset, one of the most agreeable of perfumes, should be changed into something different. The newer varieties have perpetuated these and, so far, have preserved to the pink its distinctive features.

The one great fault hitherto of the pink is the briefness of its flowering season. We doubt if even the " ever-advancing perpetualists " can remedy this without spoiling the habit of the plant. But we look in rather a different direction, and while we see the introduction of larger and more variously coloured forms we are hoping to see some more tardy in blooming to lengthen the season to an appreciable extent. The very fact that some plants

of Mrs. Sinkins and His Majesty will throw up fugitive blooms as late as August and September, removes this from the category of the impossible. These, however, are more or less intelligent speculations, engendered by our interest in the future of a flower which, as much as the rose and the pansy, has been beloved by our forefathers for hundreds of years, and we cannot complacently contemplate a future time when the evening air of June shall be no longer redolent of its perfume and it shall no more offer its modest charms which make a stronger appeal than those of many a more pretentious and gaily dressed companion. So we will leave that and come to business, for sentiment and tradition, likes and dislikes, are not going to contribute to the successful upkeep of our nurseries, or pay our men their weekly wage.

It is principally as an edging plant that the pink is held in high esteem, its dwarf and compact habit marking it out for that purpose. Its steely-grey foliage, so distinct from the green, gives it a decorative value throughout those many months when it is flowerless.

We have regretted the shortness of its season; it is shortest when it is dry and hot. In times of exceptional drought and heat we have seen whole beds come out into full bloom and go off again within a week or ten days. In cooler, damper weather they will last three weeks. It is a fact, too often taken advantage of, that the pink will grow in almost any soil, no matter how shallow, how light, or how poor. We do not contradict this, but what we do urge is that it will thrive and do its best, last longer, and carry larger blooms if it is in a good, deeply worked soil. We would beg this much consideration for it wherever it is practicable, and so give this much neglected flower a fair chance.

The finest pinks we ever saw were a magnificent lot growing along the edge of a raised vine border in a private garden. The soil was of the richest, as of course it would be, and it was 3 feet deep. We cannot even approximate those conditions for our ordinary beds of pinks, but that object lesson convinced us once for all that they will generously respond to better conditions and that because they refuse to die in poverty they will thrive and excel themselves when properly provided for. Ever since we saw those pinks in the vine border we have always used beds, double dug, manured and limed, and shall never again go back to the more

stinted regime. The roots will run a considerable distance in search of moisture and food, but it is not that entirely which we value. What we recognise is that the deeply dug soil remains moist and cool at flowering time, when too often the shallow and ill-prepared soil of most beds burns and dries, and is practically rendered sterile by the heat of the sun. Under these latter conditions we saw thousands of plants in the early days of the drought of this year 1921 on which every bloom had given up within two days of opening, while others in well-prepared soil held out for a fortnight. Neither pinks nor carnations can thrive under excessive heat if further

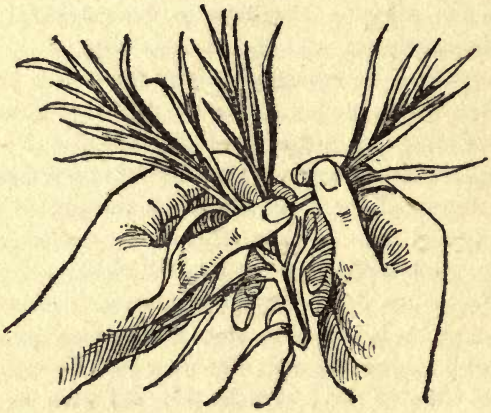

FIG. 18.—How to take a Piping

aggravated by aridity. There are other dianthus, of the Alpine type, which can be made to do so, but even these, when removed to more genial quarters and conditions, will quickly voice their appreciation.

The garden pink lends itself to easy and plentiful propagation, for it is most profuse in producing the growths from which the cuttings are made. We have often taken not less than fifty from a plant two years old. In Vol. I of this work we described in detail how to take pipings or cuttings, and what to do with them ; there is, therefore, no need for us to recapitulate. It is the quickest and most convenient method of propagation for the nurseryman, for it produces well-rooted and well-shaped plants in about two months. Many, however, prefer to take " slips " either in early spring or

early autumn, the latter by preference; this simply means the rending of a growth from the parent plant with a small strip or heel of the old wood attached. These are then planted thickly in rows, and so tenacious is the plant of life that quite a surprisingly small percentage of these slips fail to take root. Almost invariably is this the method adopted by private growers whose requirements are not very large and who are not called upon to raise neat and well-rooted plants for trade purposes. These " slips " are virtually

FIG. 19.—Pink Piping

" rough " cuttings. They strike best in an open, sandy soil if it is well and finely worked. What stems they have must be inserted in a nick or small trench opened for them, covered with soil, and trodden slightly to firm the soil about them and to keep them in position. The tops must rest evenly, the first pair or set of leaves just touching the soil.

Layering is also resorted to. It is an eminently safe mode of propagating them. The layering is done, as laid down for carnations, early in July, and under favourable conditions the plants are saleable

in September. We cannot say that this is the most expeditious method of propagating pinks, but we resort to it ourselves with all our finer and newer varieties, and consider that the extra time taken up by the operation is fully compensated for by its safety and the cent per cent results. It is usually somebody's fault if any layers fail to strike. Layered plants are lifted toward the end of September,

FIG. 20.—Pink (above, A Slip)

the layers severed and planted straight out into beds. Note again: we always dig the soil deeply and prepare it well. For selling purposes we plant at 6 inches from plant to plant and 9 inches between the row. In taking up orders, we take first every alternate row, and then every alternate plant from the remaining rows, so that should any be left unsold they remain as stock and have ample room in which to grow.

As a market flower, its great disadvantage is that, coming all at once from almost all quarters, it gluts the markets and does not realise its full value. But it always sells. Everybody has a soft spot for it, and if nothing else would sell it, then it would be bought for its exquisite scent. In provincial towns, where gluts are very unusual, better prices are obtained than those of large central markets; but these are usually supplied from outlying villages and districts, especially since the canny villager has ascertained that they have a market value. His fathers would have scoffed at the idea, but the villager to-day (like his father) is what circumstances have made him.

INDEX

PAGE

Allwoodii (*Dianthus Allwoodii*).
- disbudding 58
- " Harold " in pots ... 58
- its cultivation 57
- its origin 54
- its propagation 56
- its value as a florist's flower 58
- layering 56
- length of season 57
- over-propagation, dangers of 54
- soil 58

Border Carnations 29
- Bizarres 51
- commercial possibilities ... 29
- Crimson Clove 51
- for market 32
- Fancies and Flakes ... 51
- Grenadier 33
- Hybridisers 31
- " Jacks " 39
- layering 41
- new forms... 32
- pan of seedlings 38
- Perpetuals 49
- Picotees 51
- planting 39
- ,, ... 45
- potting 45
- sowing the seeds 36
- transplanting seedlings ... 37

Garden Pinks 60
- as edging plants 61
- as market flowers ... 65
- in vine border 61
- planting 64

PAGE

Garden Pinks—
- propagating by layers ... 63
- propagating by slips ... 63
- the type 60
- shortness of season ... 60
- to withstand drought ... 62

Malmaison Carnations ... 52

Perpetual Flowering Carnations.
- a florisst' flower 3
- a well-rooted cutting ... 10
- " Bacterium " 21
- cleanliness 13
- compost for 5-in. pots ... 13
- compost for 7 in. pots ... 16
- cutting bed 4
- cutting the flowers ... 23
- enemies 20
- evil of deep potting ... 20
- fertilisers 18
- good and bad cuttings ... 5
- housing the plants ... 18
- how to stop 12
- indoor planting 27
- in its infancy 1
- insect pests 22
- insecticides 17
- lack of perfume 2
- packing flowers 24
- packing shed 23
- potting 12
- pot plant in September ... 17
- pot plant in October ... 19
- propagation by cuttings... 4
- red spider 17
- re-potting 26
- rust 21
- " spot " disease 21

PAGE

Perpetual Flowering Carnations—

spraying 28
"stem rot" 20
stopping 11
summer treatment ... 11
temperature 14

PAGE

Perpetual Flowering Carnations—

treatment in May ... 14
treatment in winter ... 19
treatment of older plants 26
ventilation 14
watering 28

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